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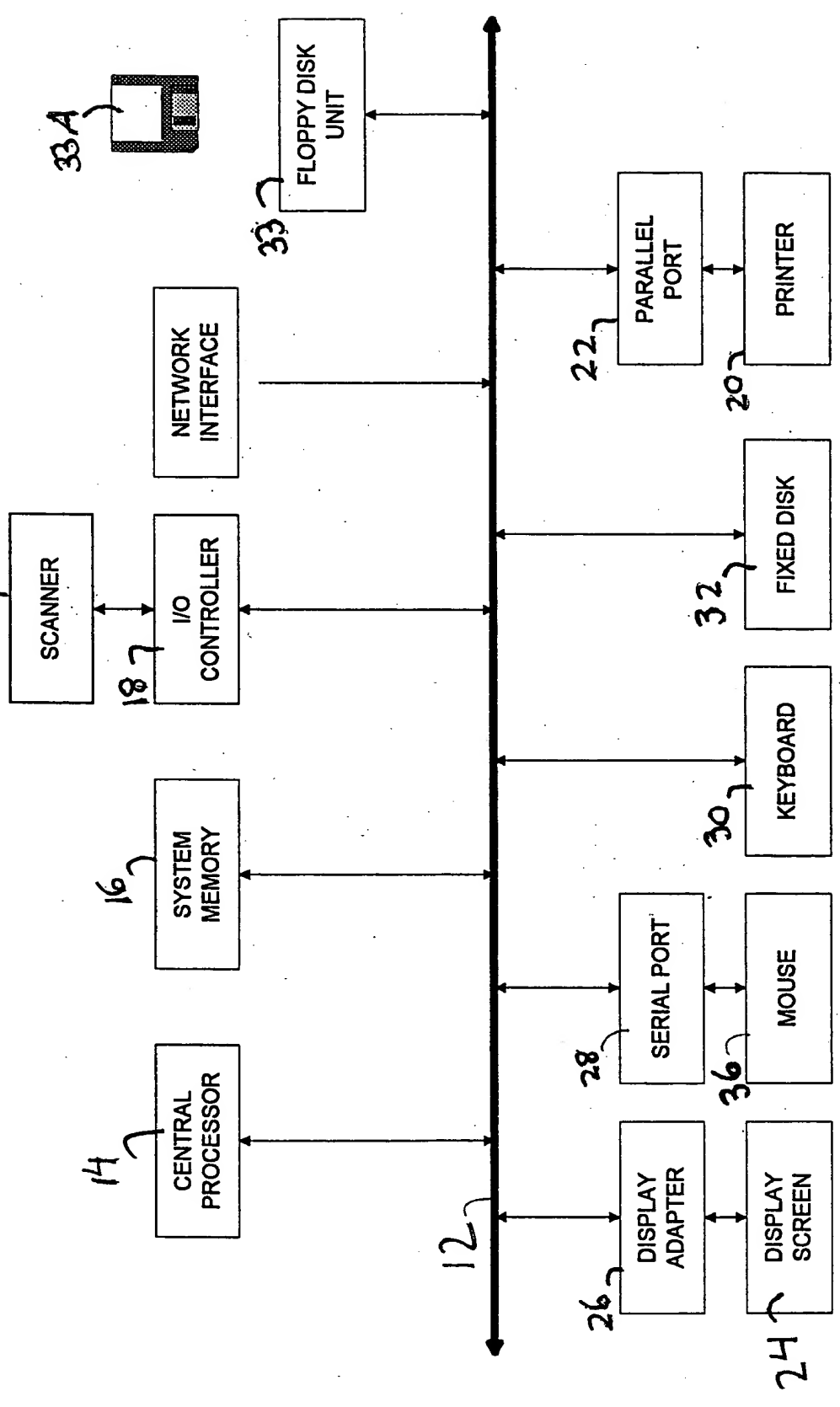


Fig. 1

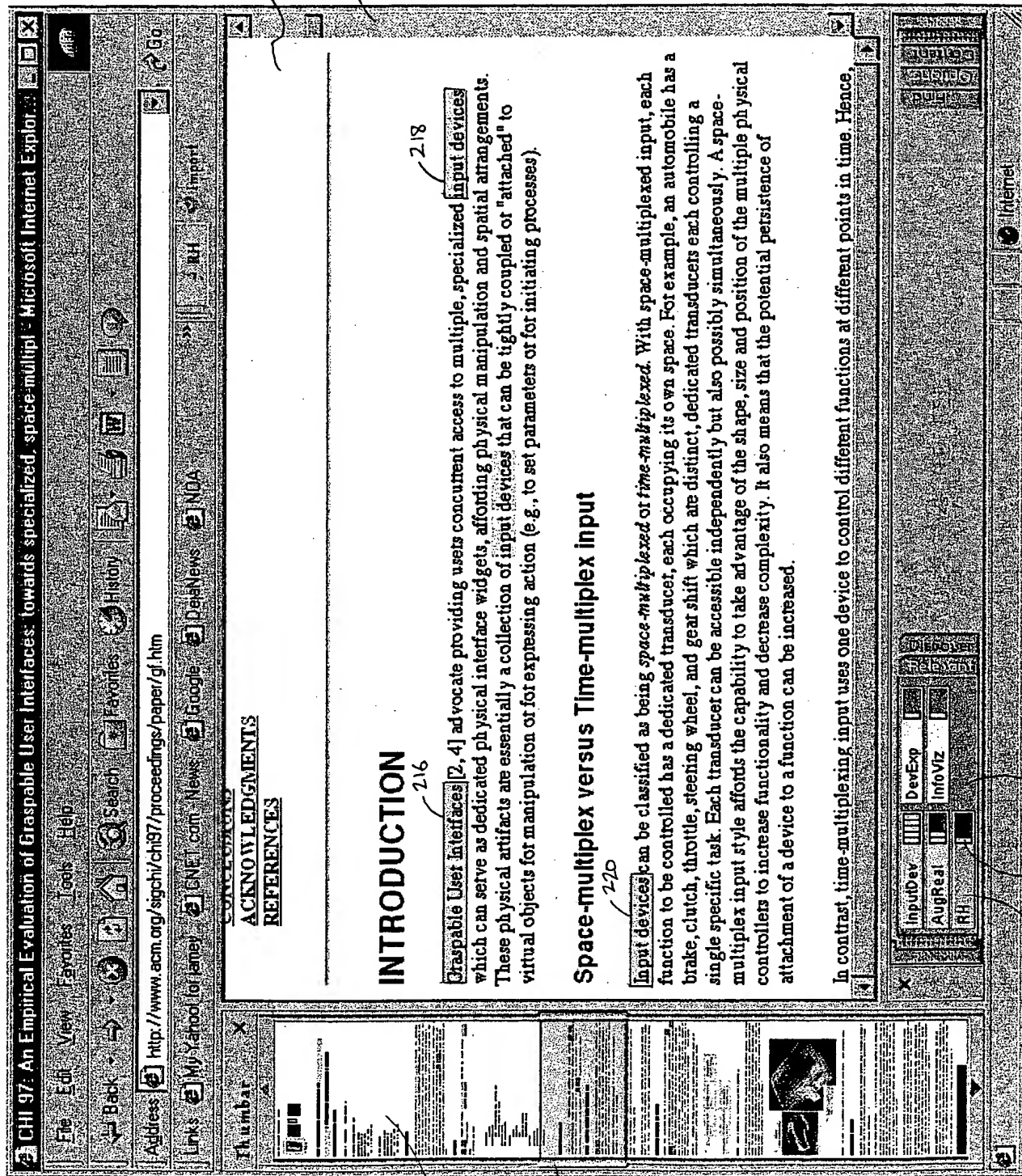
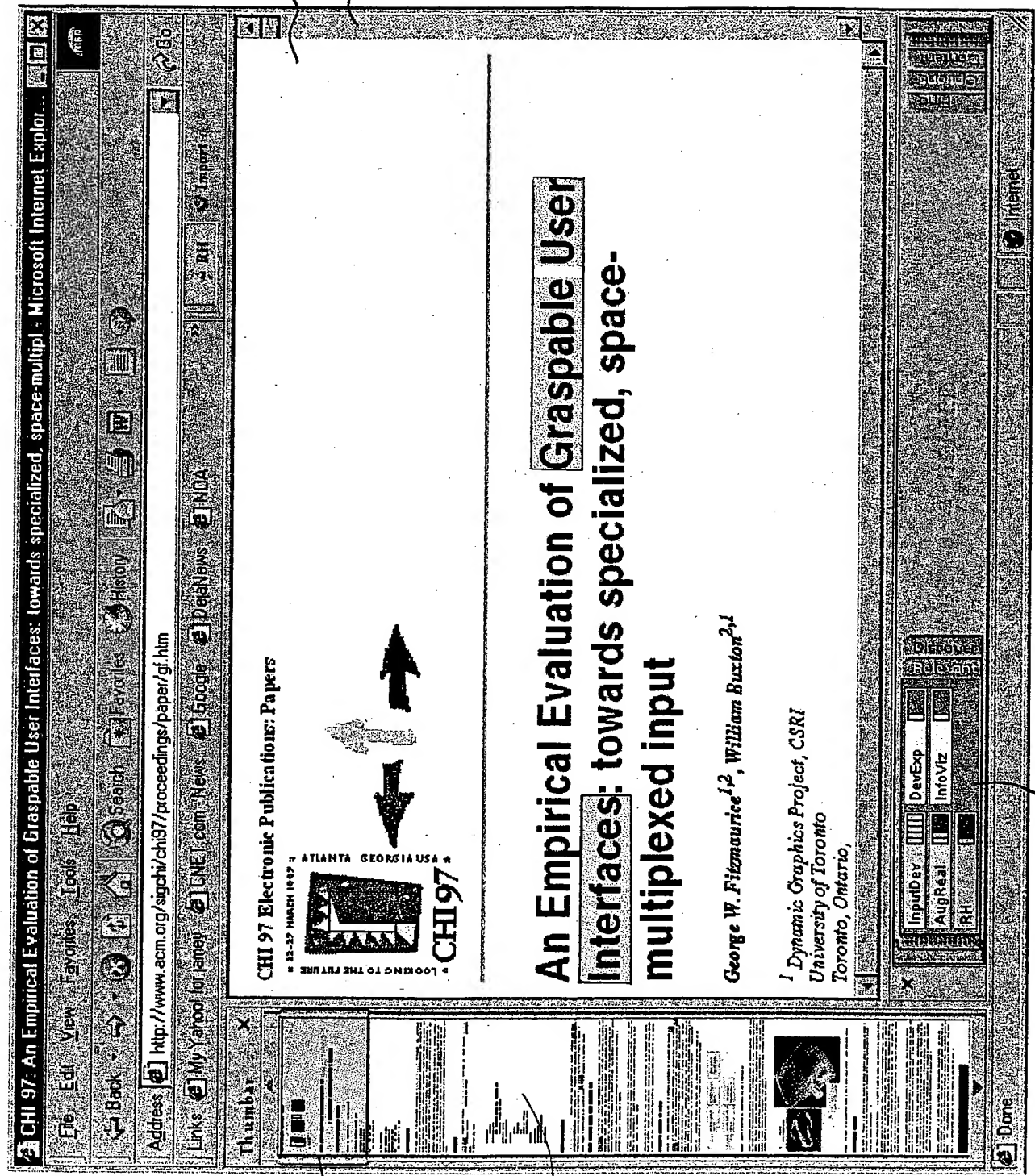


Fig. 2A

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202

204

200

214A

214

Fig. 2B

206

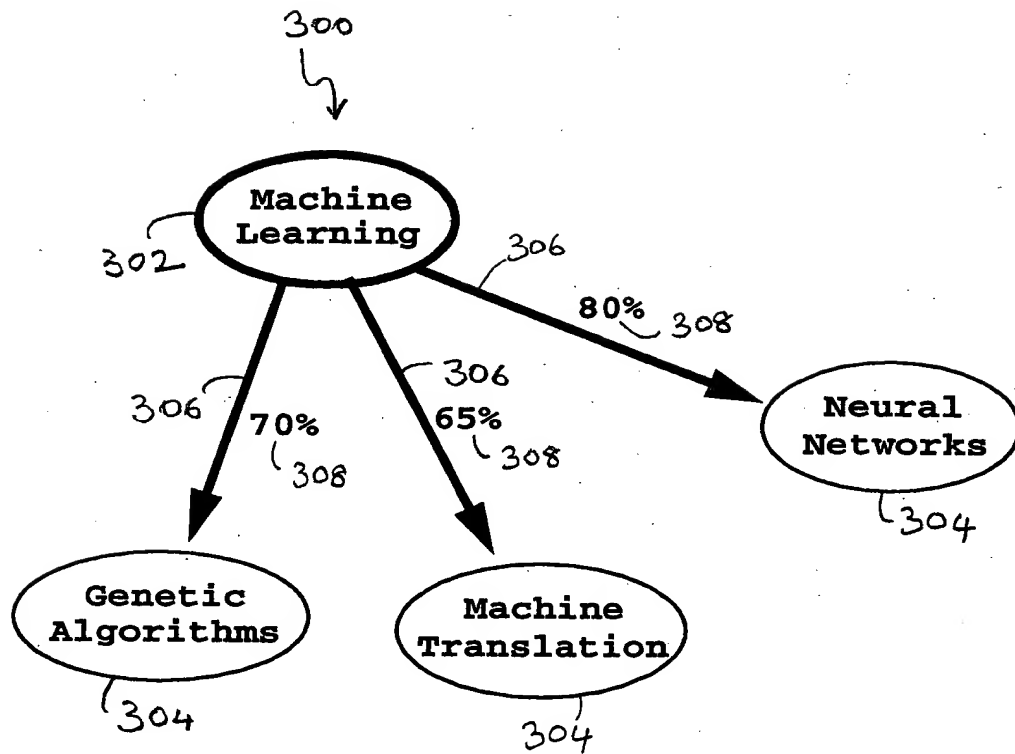


Fig. 3

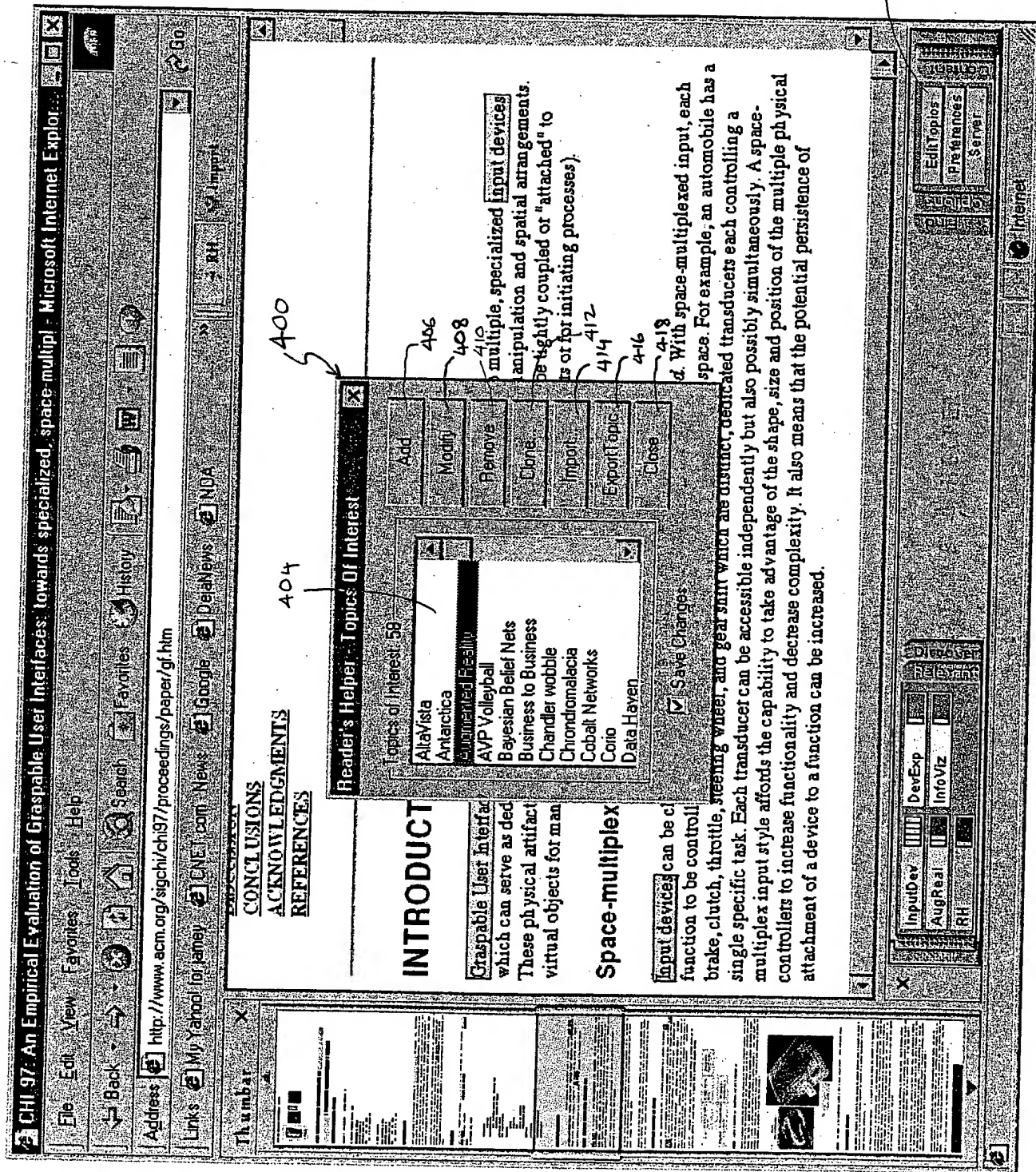


Fig. 4A

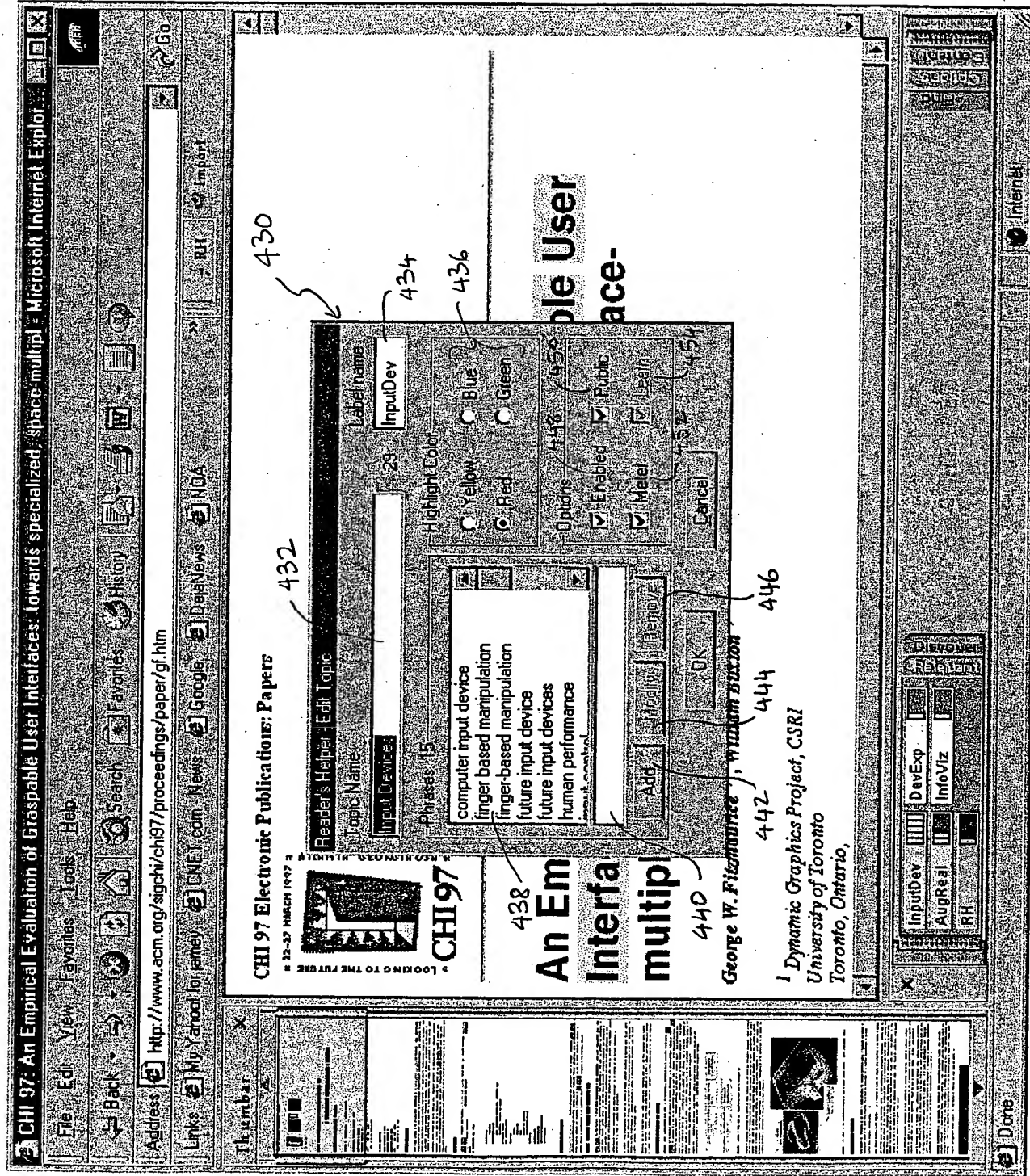


Fig. 4B

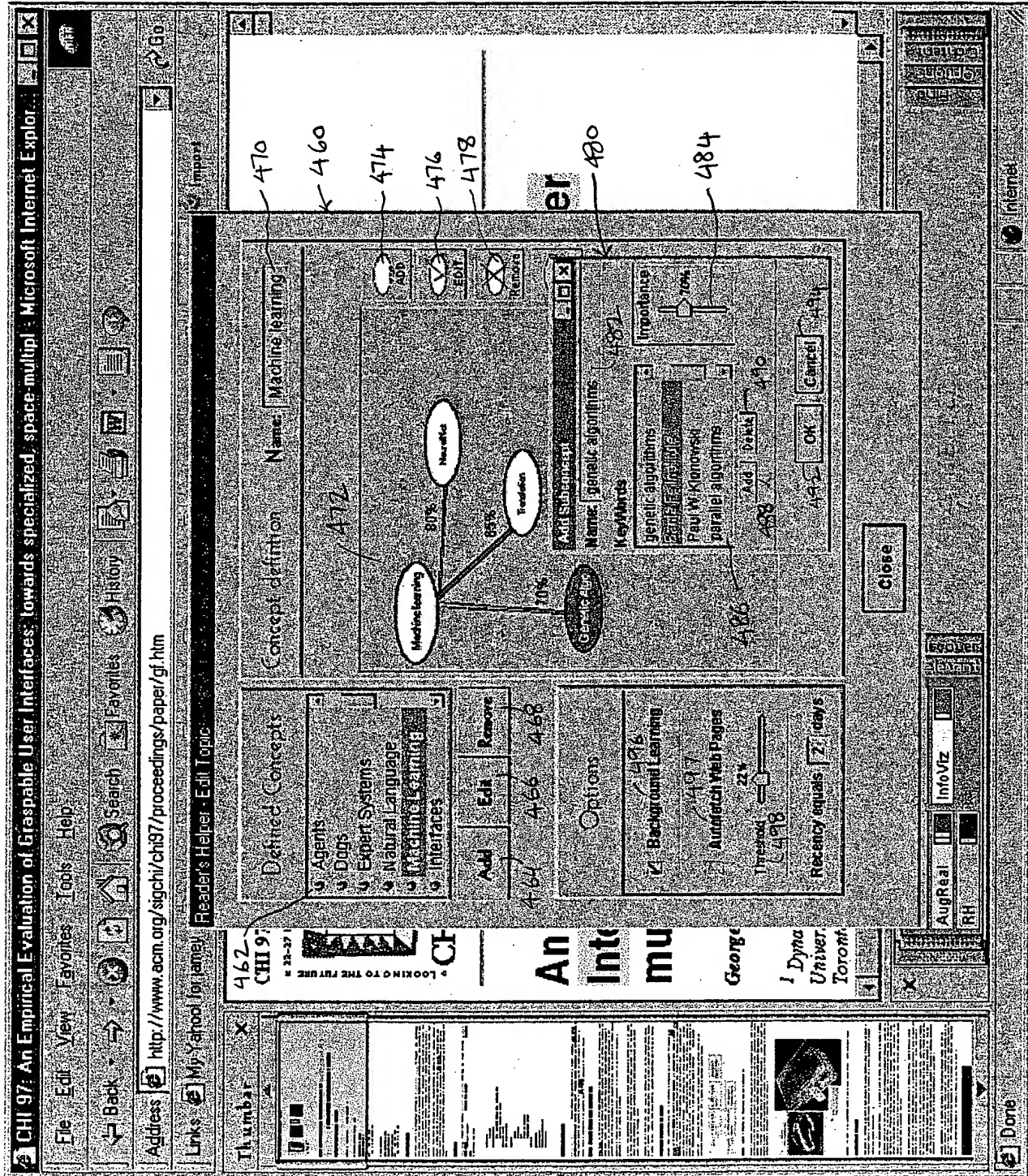


Fig. 4c

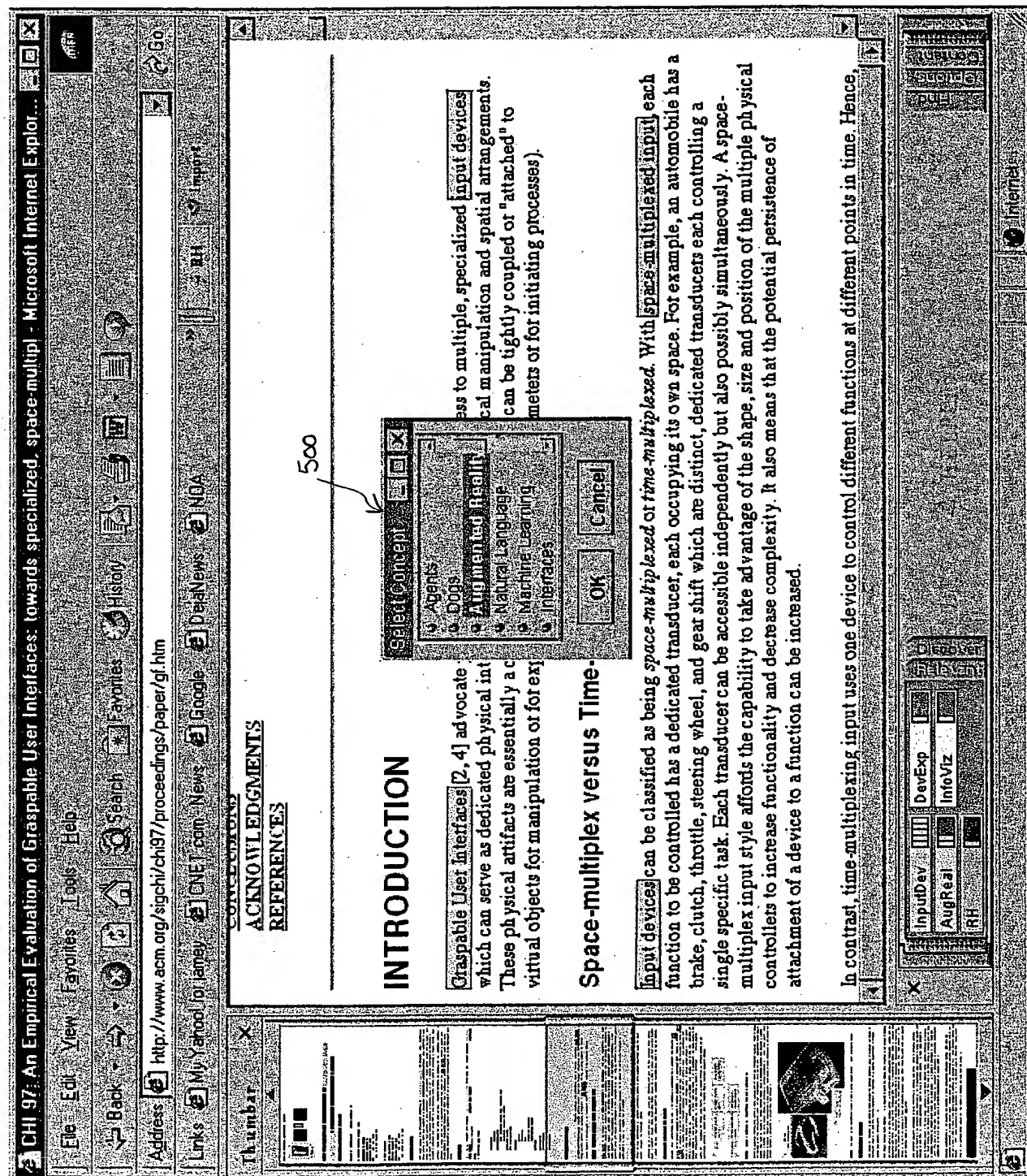


Fig. 5A

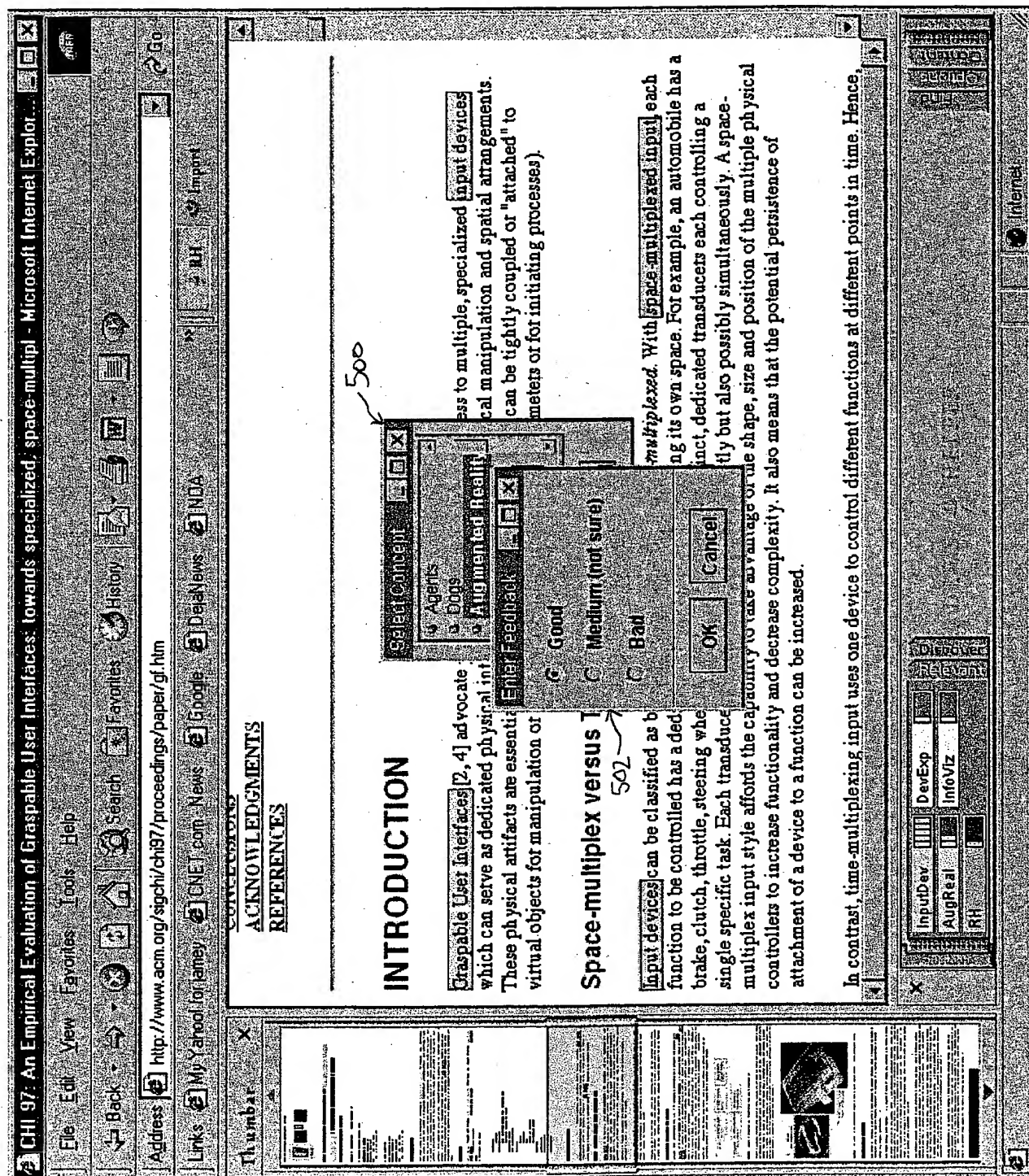


Fig. 5B

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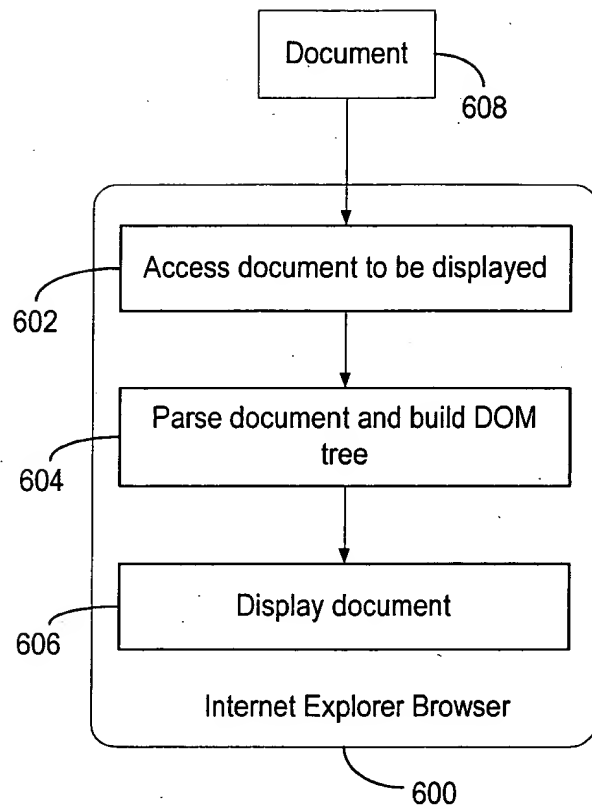


Fig. 6

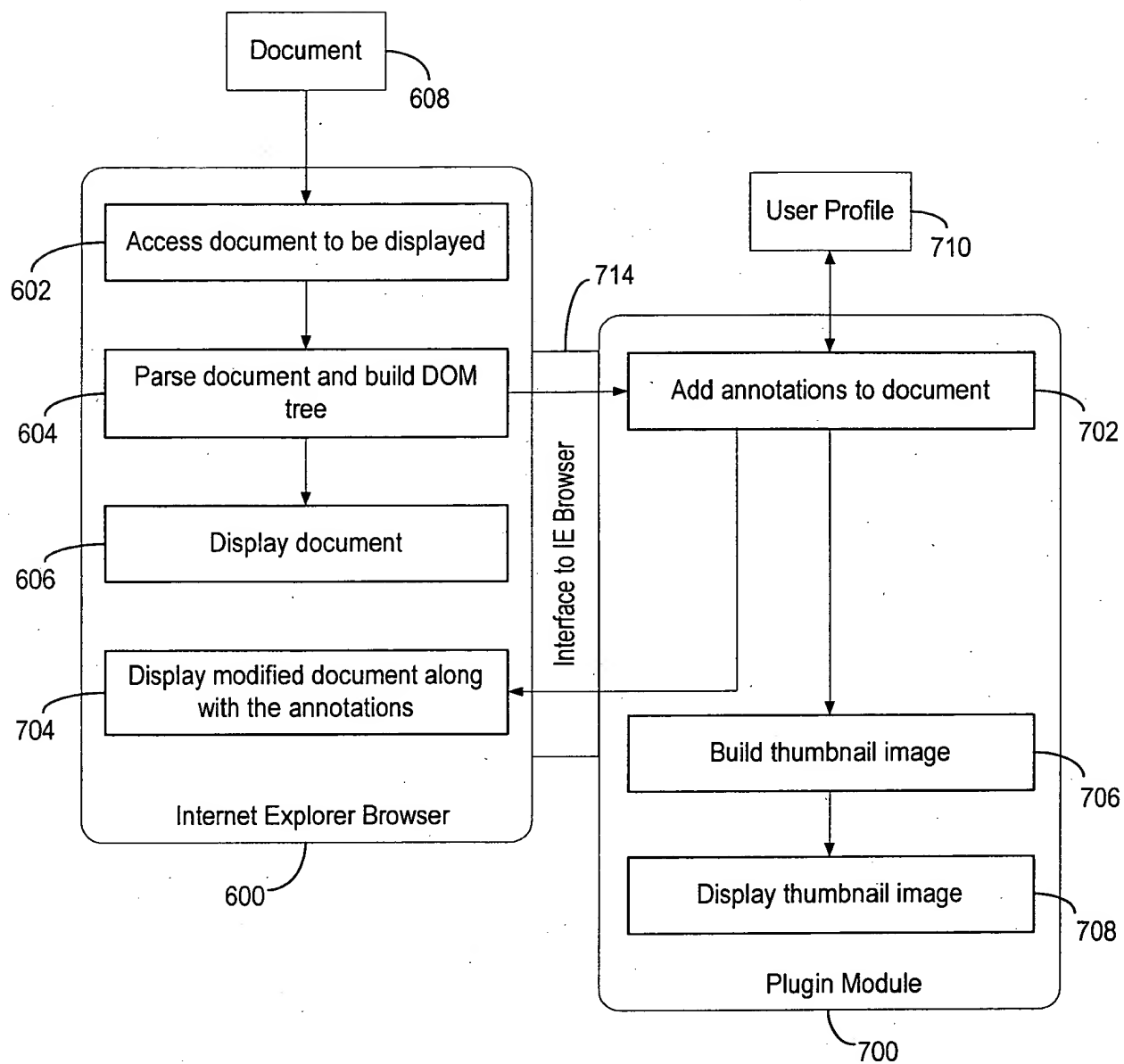


Fig. 7

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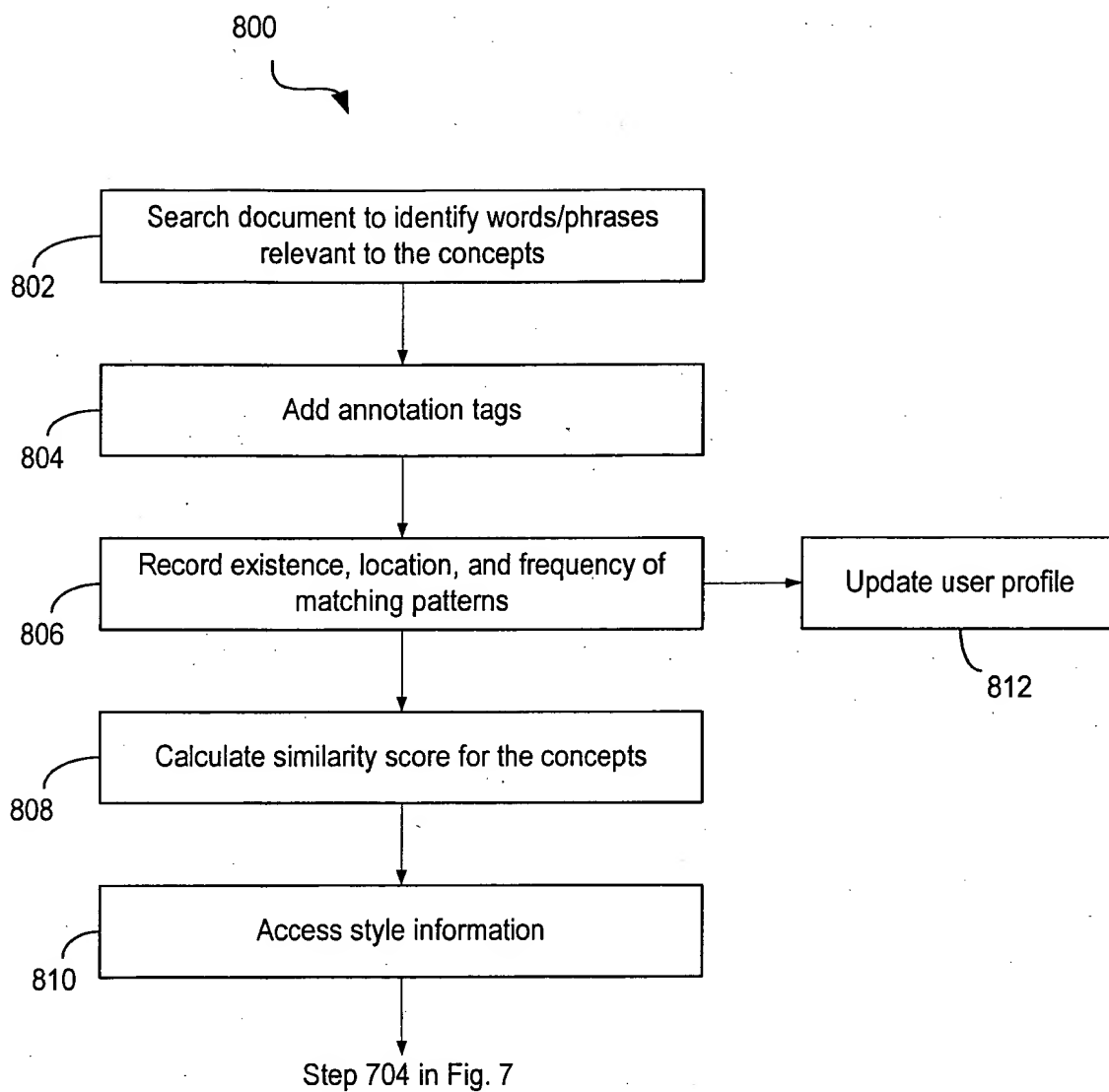


Fig. 8


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We have approached this challenge by introducing an
 intelligent agent
 that analyzes interactions between user and
 expert system and
 automatically constructs database queries based on this analysis. The user is
 unobtrusively notified when information relevant to the current diagnostic
 context has been returned, and may immediately access it if desired. From the
 user's perspective all database machinery is entirely transparent; indeed no
 formal query language is even made available. Hence we term this approach
 query-free information retrieval. <p>

As we hope will be apparent from what follows, the introduction of the
 intelligent agent
 additionally offers one solution to a fundamental problem facing designers of
 cooperative information systems: How can legacy systems of substantial com-
 plexity be integrated within a larger system context? By requiring that all
 interactions with the legacy database be mediated by the agent, we have been
 able to isolate the database system cleanly while still supporting query-free
 information retrieval. <p>

FIXIT is comprised of the three subsystems already mentioned: the probabilistic
 expert system, the
 legacy full-text database system (to which we added a new, semantically-based,
 indexing structure that supports limited natural
 language queries), and the
 intelligent agent
 that effectively integrates them. The following sections describe these system
 components, provide implementation details, illustrate the runtime behavior of
 FIXIT, report on operational experience, and close with some observations about
 query-free information retrieval and the potential for generalizing the under-
 lying paradigm. <p>

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Fig. 9

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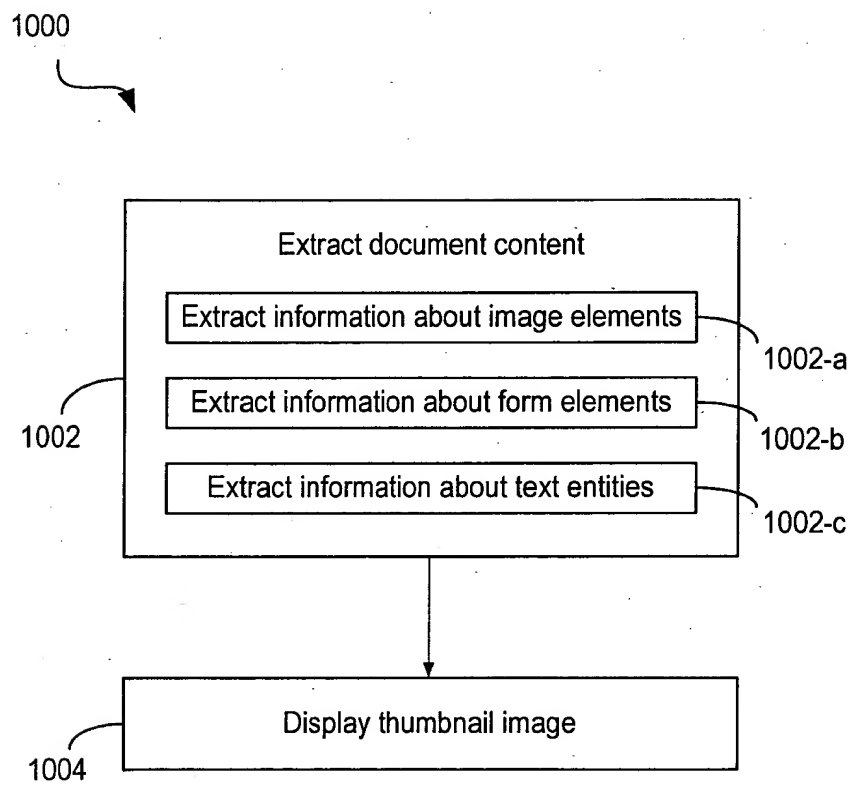


Fig. 10